

FIG. 1

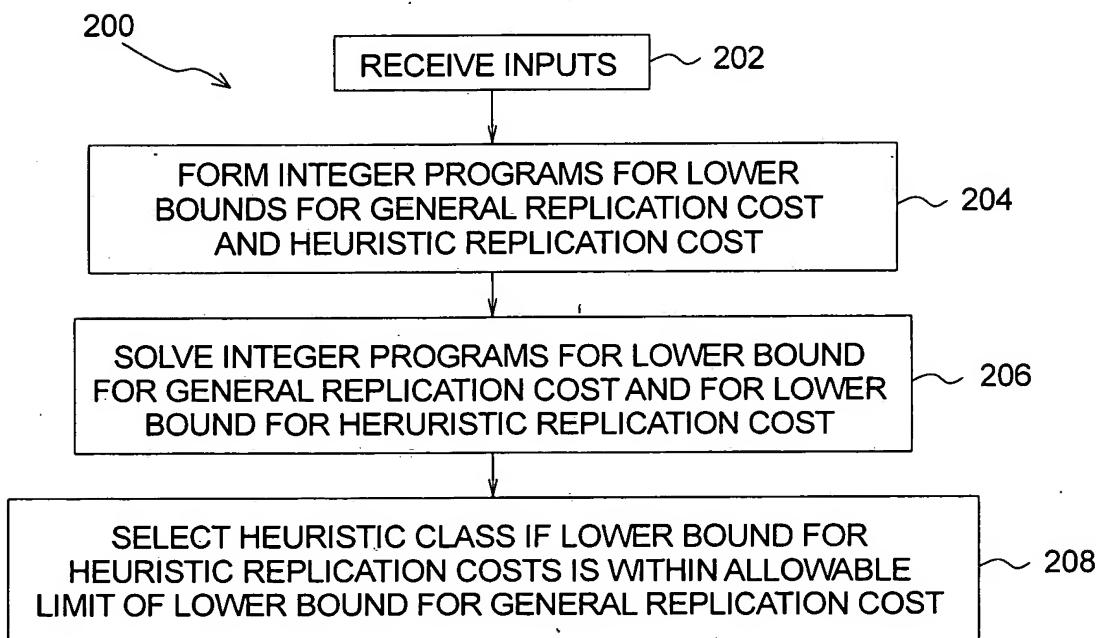


FIG. 2

Table 1		
Variable	Type	Description
$store_{nik}$	Binary	nth node stores kth data object during ith interval
$create_{nik}$	Binary	kth data object created on nth node during ith interval
$covered_{nik}$	Binary	nth node can access kth data object w/in latency threshold during ith interval
$open_n$	Binary	nth node is enabled; it can store replicas and run data placement heuristics

FIG. 3

Table 2		
Variable	Type	Description
$read_{nik}$	Integer	Number of read requests from nth node for kth data object during ith interval
$write_{nik}$	Integer	Number of write requests from nth node for kth data object during ith interval
$latency_{nm}$	Real	Data access latency for accessing an object at mth node from nth node
$dist_{nm}$	Binary	nth node can access mth node within latency threshold
$know_{nm}$	Binary	nth node uses information from mth node to make placement decision
$fetch_{nm}$	Binary	nth node can fetch data objects from mth node
$hist_{nik}$	Binary	nth node has a record in its activity history of kth data object being accessed on nth node during ith interval
$T_{lat}$	Real	Target latency threshold
$T_{qos}$	Real	Specified ratio of accesses served within latency threshold
$\alpha$	Integer	Unit cost for storage
$\beta$	Integer	Unit cost for replica creation
$\gamma$	Integer	Unit cost penalty for an access exceeding latency threshold
$\delta$	Integer	Unit cost for an update message
$\zeta$	Integer	Unit cost for enabling and managing a node

FIG. 4

Table 3

Heuristic class	Heuristic properties				
	Storage constraint	Replica constraint	route	know	hist
Storage constrained heuristics	x		global	global	multi
Replica constrained heuristics		x	global	global	multi
Decentralized storage constrained heuristics w/ local routing	x		local	local	multi
Local caching	x		local	local	single
Cooperative caching	x		global	global	single
Local caching w/ prefetching	x		local	local	single
Cooperative caching w/ prefetching	x		global	global	single

FIG. 5

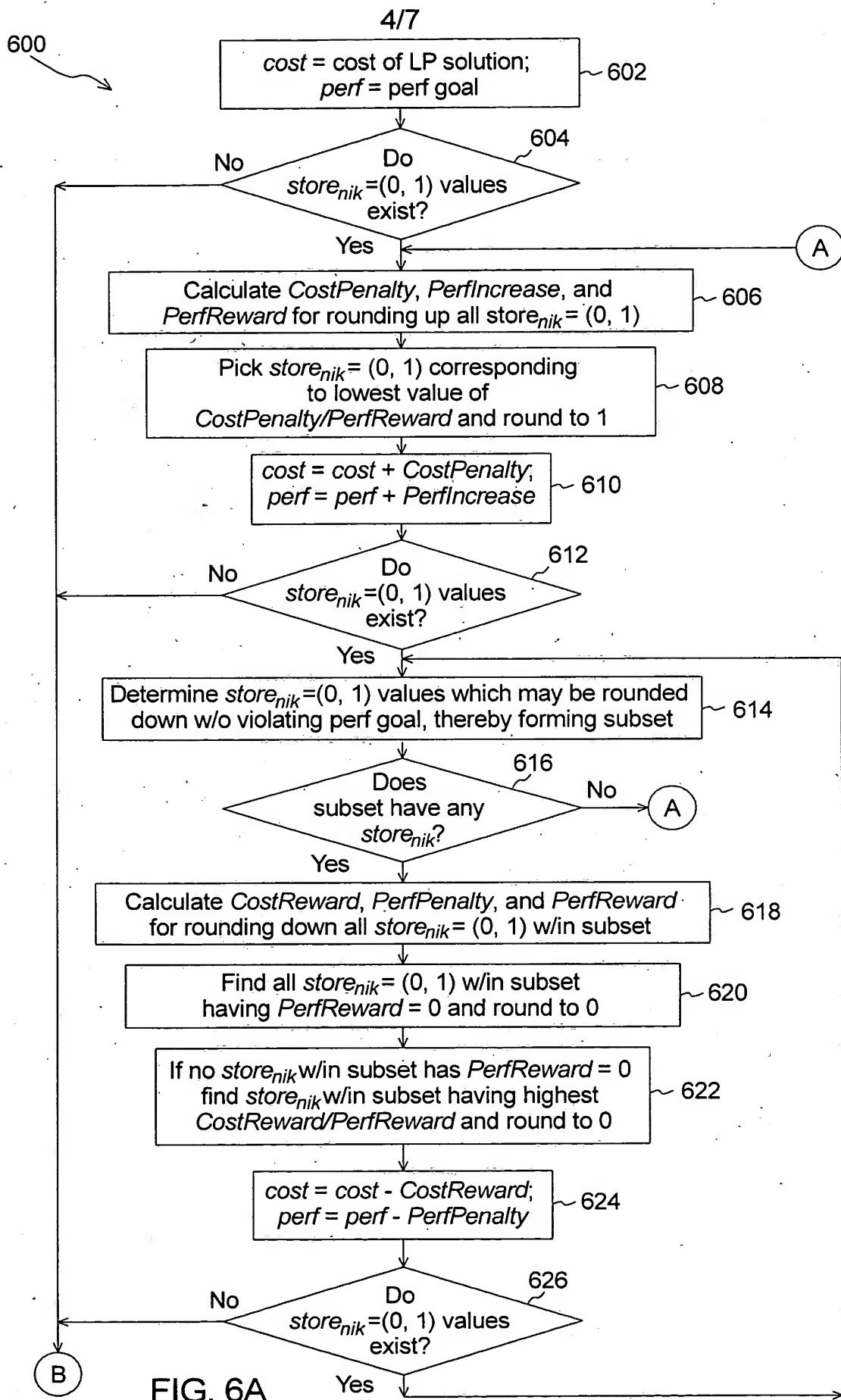


FIG. 6A

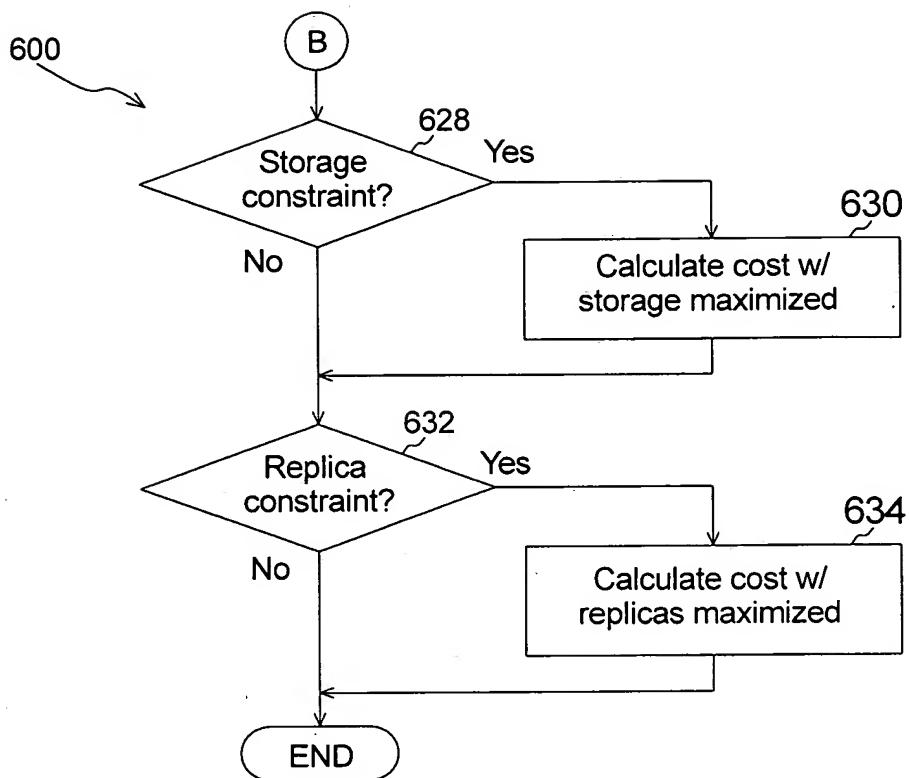


FIG. 6B

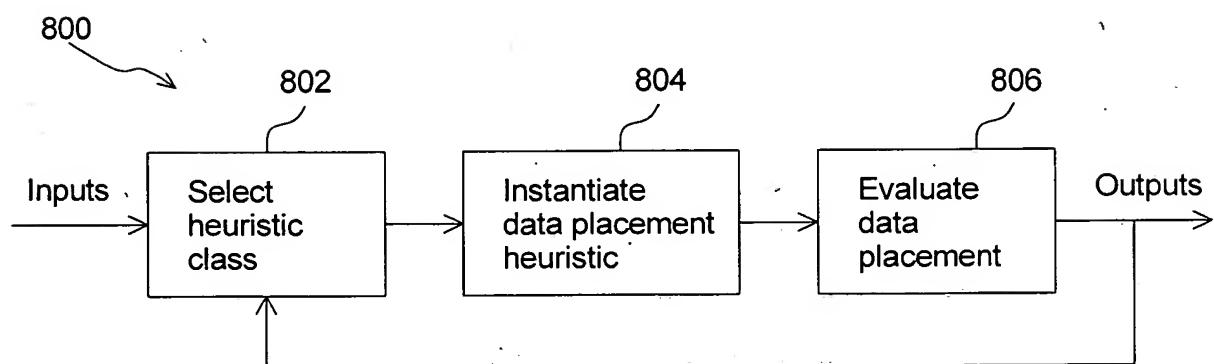


FIG. 8

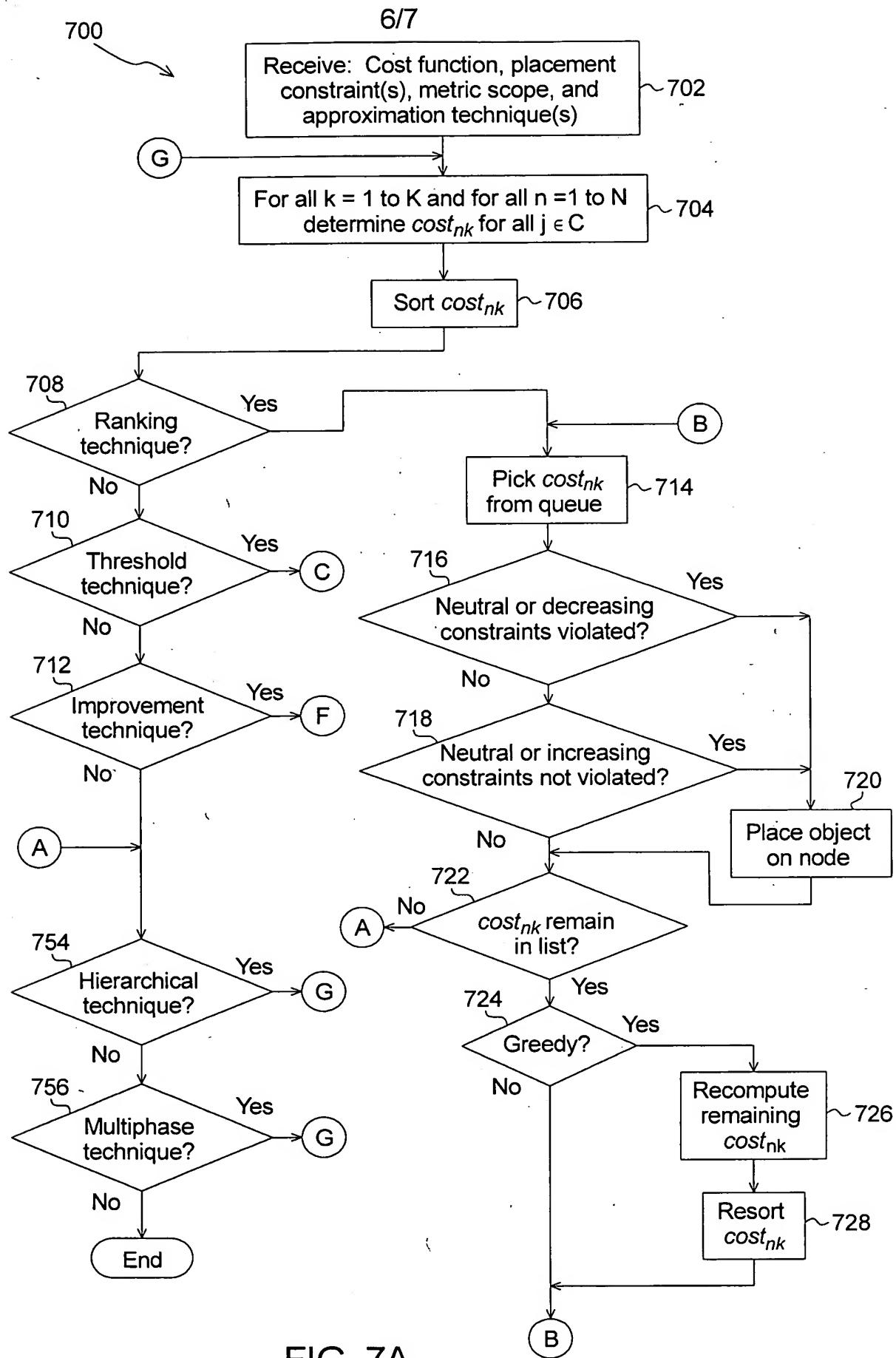


FIG. 7A

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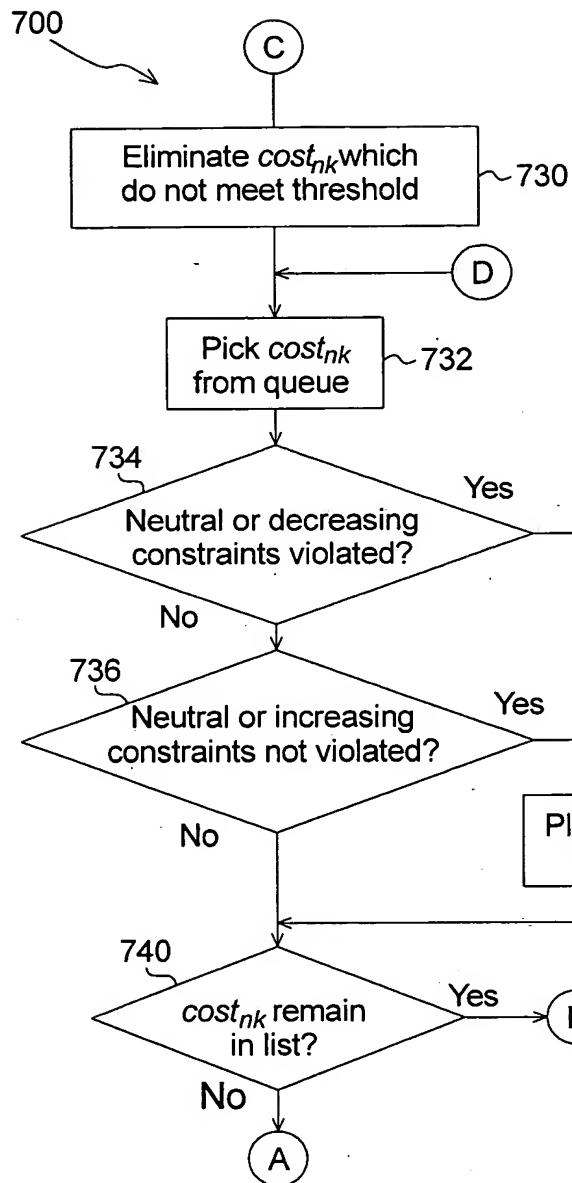


FIG. 7B

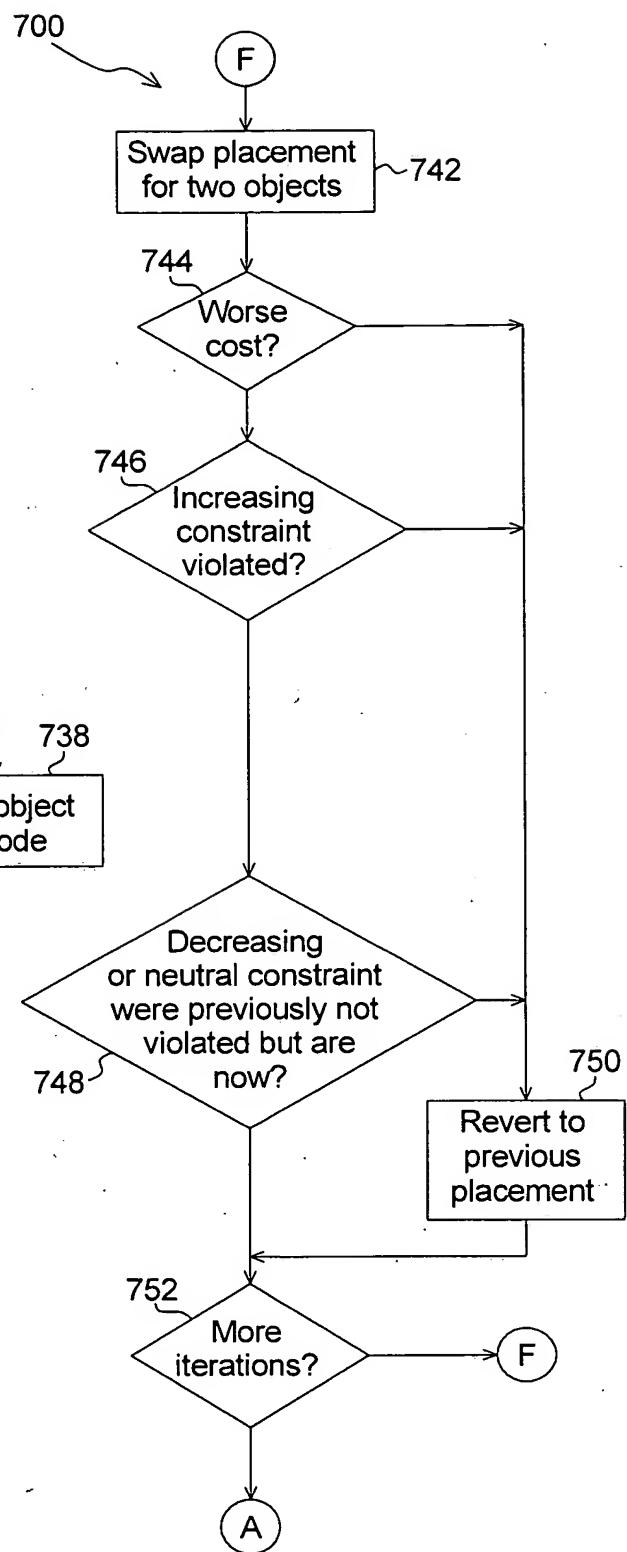


FIG. 7C